Ι

CLAIM AMENDMENTS

Please cancel claims 16-46 to a non-elected invention without prejudice to filing a divisional application containing the same.

Please amend claims 1 and 8 as follows:

1. (Currently amended) A polymerizable material for making an ophthalmic device, comprising:

(a) a water-soluble polyvinyl alcohol having crosslinkable groups; and

- (b) a modifier which is a material different from but miscible with the water-soluble polyvinyl alcohol and present in the polymerizable material in an amount sufficient to improve one or more physical properties of the ophthalmic device made from the polymerizable material, wherein the one or more physical properties are selected from the group consisting of stress at break (N/mm²), percentage of elongation at break, toughness or energy to break (N/mm), and susceptibility to fracture.
- 2. (Original) A polymerizable material of claim 1, wherein said modifier is selected from the group consisting of nanoparticles having a hydrophilic surface, a copolymer having hydrophobic groups or units for imparting at least one desired physical property to said ophthalmic device and hydrophilic groups or units in an amount sufficient to render the copolymer miscible with the polyvinyl alcohol, and mixtures thereof.
- 3. (Original) A polymerizable material of claim 2, wherein said water-soluble polyvinyl alcohol is a polyhydroxyl compound which has a weight average molecular weight of at least about 2000 and which comprises from about 0.5 to about 80%, based on the number of hydroxyl groups in the poly(vinyl alcohol), of units of the formula I, I and II, I and III, or I and II and III

$$\begin{array}{c|c}
 & H_2 & H_2 \\
 & C & C \\
 & C & C \\
 & R_3 & O \\
 & R_1 & R_2
\end{array}$$

in which R is alkylene having up to 12 carbon atoms, R_1 is hydrogen or lower alkyl, R_2 is an olefinically unsaturated, electron-withdrawing, crosslinkable radical having up to 25 carbon atoms, and R_3 is hydrogen, a C_1 - C_6 alkyl group or a cycloalkyl group,

$$\begin{array}{c|c} H_2 & H_2 \\ \hline C & C \\ \hline \\ R_3 & O \\ \hline \\ R & R_7 \\ \end{array}$$

wherein R and R₃ are as defined above, and R₇ is a primary, secondary or tertiary amino group or a quaternary amino group of the formula N⁺(R')₃X⁻, in which each R', independently of the others, is hydrogen or a C₁ -C₄ alkyl radical and X is HSO₄⁻, F⁻, Cl⁻, Br⁻, CH₃ COO⁻, OH⁻, BF⁻, or H₂PO₄⁻,

$$\begin{array}{c|c} & H_2 & H_2 \\ \hline C & CH & C \\ \hline & R_3 & O \\ \hline & & N & R_8 \\ \hline \end{array}$$

in which R and R₃ are as defined above, and R₈ is the radical of a monobasic, dibasic or tribasic, saturated or unsaturated, aliphatic or aromatic organic acid or sulfonic acid.

4. (Original) A polymerizable material of claim 3, wherein said water-soluble polyvinyl alcohol is a polyhydroxyl compound which has a molecular weight of at least about 2000 and which comprises from about 0.5 to about 80%, based on the number of hydroxyl groups in the poly(vinyl alcohol), of units of the formula I, wherein R₂ is a radical of formula IV or formula V

$$-CO-NH-(R_5-NH-CO-O)_q -R_6 -O-CO-R_4$$
 (IV)

$$-[CO-NH-(R_5-NH-CO-O)_q -R_6 -O]_p-CO-R_4$$
 (V)

in which p and q, independently of one another, are zero or one, and R_5 and R_6 , independently of one another, are lower alkylene having 2 to 8 carbon atoms, arylene having 6 to 12 carbon atoms, a saturated bivalent cycloaliphatic group having 6 to 10 carbon atoms, arylenealkylene or alkylenearylene having 7 to 14 carbon atoms or arylenealkylenearylene having 13 to 16 carbon atoms, and in which R_4 is an olefinically

unsaturated copolymerizable radical having 2 to 24 carbone atoms, preferably having 2 to 8 carbonatoms, more preferably having 2 to 4 carbon atoms.

- 5. (Withdrawn) A polymerizable material of claim 3, wherein said modifier is composed of the nanopaticles having a hydrophilic surface.
- 6. (Withdrawn) A polymerizable material of claim 5, wherein the nanoparticles are nanosized silica fillers.
- 7. (Original) A polymerizable material of claim 3, wherein said modifier is composed of one or more copolymers each having hydrophobic groups or units for imparting at least one desired physical property to said ophthalmic device and hydrophilic groups or units in an amount sufficient to render the copolymer miscible with the crosslinkable polyvinyl alcohol.
- 8. (Currently amended) A polymerizable material of claim 7, wherein said modifier is a N-vinyl lactam copolymer which is a copolymerization product of at least one N-vinyl lactam with one or more hydrophobic monomer, wherein said at least one N-vinyl lactam has a structure of formula (VI)

$$\begin{array}{c|c}
R_1 & R \\
\hline
R_2 & N \\
\hline
R_{20} & R_{19} \\
\hline
R_{21} & N \\
\end{array}$$
(VI)

in which R_{19} is an alkylene di-radical having from 2 to 8 carbon atoms, R_{20} is hydrogen, C_1 - C_7 alkyl, aryl having up to 10 carbon atoms, aralkyl or alkaryl having up to 14 carbon atoms, and R_{21} is hydrogen or lower alkyl having up to 7 carbon atoms.

- 9. (Original) A polymerizable material of claim 8, wherein said N-vinyl lactam is N-vinyl pyrrolidone.
- 10. (Withdrawn) A polymerizable material of claim 7, wherein said modifier is a N,N-dialkylmethacrylamide copolymer which is a copolymerization product of a N,N-di-C₂-C₄ alkyl methacrylamide with at least one hydrophobic monomer.

PATENT Docket No.: CL/V-32421A

11. (Withdrawn) A polymerizable material of claim 10, wherein the N,N-di-C₂-C₄ alkyl methacrylamide is N,N-dimethylmethacrylamide.

- 12. (Withdrawn) A polymerizable material of claim 7, wherein said modifier is a non-crosslinkable polyurethane having a molecular weight of at least about 2000, or a crosslinkable polyurethane.
- 13. (Withdrawn) A polymerizable material of claim 12, wherein said non-crosslinkable polyurethane is the reaction product of an isocyanate-capped polyurethane with water and amine, wherein said crosslinkable polyurethane is the reaction product of the isocyanate-capped polyurethane with an ethylenically unsaturated amine (primary or secondary amine) or an ethylenically unsaturated monohydroxy compound, wherein said isocyanate-capped polyurethane is a copolymerization product of
 - (a) at least one polyalkylene glycol of formula

$$HO-(R_9-O)_{n-}(R_{10}-O)_{m-}(R_{11}-O)_{l-}H$$
 (1)

wherein R_9 , R_{10} , and R_{11} , independently of one other, are each linear or branched C_2 - C_4 -alkylene, and n, m and l, independently of one another, are each a number from 0 to 100, wherein the sum of (n+m+l) is 5 to 100,

- (b) at least one branching agent selected from the group consisting of
 - (i) a linear or branched aliphatic polyhydroxy compound of formula R_{12} -(OH)_X (2),

wherein R_{12} is a linear or branched C_3 - C_{18} aliphatic multi-valent radical and x is a number ≥ 3 ,

- (ii) a polyether polyol, which is the polymerization product of a compound of formula (2) and a glycol,
- (iii) a polyester polyol, which is the polymerization product of a compound of formula (2), a dicarboxylic acid or a derivative thereof and a diol, and
- (iv) a cycloaliphatic polyol selected from the group consisting of a C5-C8-cycloalkane which is substituted by \geq 3 hydroxy groups and which is unsubstituted by alkyl radical, a C5-C8-cycloalkane which is substituted by \geq 3 hydroxy groups and which is substituted by one ore more C₁-C₄ alkyl radicals, and an unsubstituted monoand disaccharide,
- (v) an aralkyl polyol having at least three hydroxy C₁-C₄ alkyl radicals, and
 (c) at least one di- or polyisocyanate of formula

$$R_{13}^{-}(NCO)_{y}$$
 (3)

wherein R_{13} the multivalent radical of a linear or branched C_3 - C_{24} aliphatic polyisocyanate, the multivalent radical of a C_3 - C_{24} cycloaliphatic or aliphatic-cycloaliphatic polyisocyanate, or the multivalent radical of a C_3 - C_{24} aromatic or araliphatic polyisocyanate, and y is a number from 2 to 6,

wherein said ethylenically unsaturated monohydroxy compound is a hydroxy-substituted lower alkylacrylate, a hydroxy-substituted lower alkylmethacrylate, a hydroxy-substituted lower alkyl-acrylamides, a hydroxy-substituted lower alkyl-methacrylamide, or a hydroxy-substituted lower alkylvinylether, wherein said ethylenically unsaturated amine has formula (4), (4') or (4")

$$R_{14} \xrightarrow{H} C \xrightarrow{i} (z)_{j} O \xrightarrow{C}_{k} Q$$

$$R_{15}$$

$$R_{15}$$

$$CH_{2}$$

$$H \xrightarrow{K} CH_{2}$$

$$(4')$$

In which, I, j and k, independent of one another, are o or 1;

 R_{14} is hydrogen, a linear or branched C_1 - C_{24} alkyl, a C_2 - C_{24} alkoxyalkyl, a C_2 - C_{24} alkylcarbonyl, a C_2 - C_{24} alkoxycarbonyl, an unsubstituted or C_1 - C_4 alkyl- or C_1 - C_4 alkoxy-substituted C_6 - C_{10} aryl, a C_7 - C_{18} aralkyl, a C_{13} - C_{22} arylalkylaryl, a C_3 - C_8 cycloalkyl, a C_4 - C_{14} cycloalkylalkyl, a C_7 - C_{18} cycloalkylalkylcycloalkyl, a C_5 - C_{20} alkylcycloalkylalkyl, or an aliphatic-heterocyclic radical;

Z is a C_1 - C_{12} alkylene radical, phenylene radical or C_7 - C_{12} aralkylene radical; R_{15} and R_{15} , independently of each other, are hydrogen, C_1 - C_4 alkyl or halogen; and

PATENT Docket No.: CL/V-32421A

Q is a radical of formula (5)

$$---(Z')_{r} - C - C - C - R_{16}$$

$$R_{17}$$
(5)

wherein r is the number 0 or 1,

each of R_{16} and R_{17} independently of the other is hydrogen, C_1 - C_4 alkyl, phenyl, carboxy or halogen,

 R_{18} is hydrogen, C_1 - C_4 alkyl or halogen, and Z' is a linear or branched C_1 - C_{12} alkylene, an unsubstituted phenylene, an C_1 - C_4 alkyl- or C_1 - C_4 alkoxy-substituted phenylene, or a C_7 - C_{12} aralkylene.

14. (Withdrawn) A polymerizable material of claim 13, wherein component (a) consists of one or more polyalkylene glycols of formula (1a)

$$HO-(CH_2-CH_2-O)_n-(CHY_1-CHY_2-O)_m-H$$
 (1a)

wherein one of radicals Y₁ and Y₂ signifies methyl and the other radical signifies hydrogen, and n and m, independently of one another, each denote a number from 0 to 50, wherein the sum of (n+m) is 8 to 50,

wherein component (b) consists of one or more linear or branched aliphatic polyhydroxy compounds of formula (2), in which x is a number from 3 to 8,

wherein component (c) consists of one or more diisocyanates of formula (3a)

$$OCN-R_s-NCO$$
 (3a)

wherein R_5 is a linear or branched C3-C18-alkylene, an unsubstituted or C1-C4-alkylsubstituted or C1-C4-alkoxy-substituted C6-C10-arylene, a C7-C18-aralkylene, a C6-C10-arylene-C1-C2-alkylene-C6-C10-arylene, a C3-C8-cyclo-alkylene, a C3-C8-cycloalkylene-C1-C6-alkylene, a C3-C8-cycloalkylene-C1-C6-alkylene, a C3-C8-cycloalkylene-C1-C6-alkylene, or a C1-C6-alkylene-C3-C8-cycloalkylene-C1-C6-alkylene, wherein said ethylenically unsaturated amine is selected from the group consisting of mono-C1-C4 alkylamino-C1-C4 alkyl-acrylates, mono-C1-C4 alkylamino-C1-C4 alkyl-methacrylates, di- C1-C4 alkylamino- C1-C4 alkyl-acrylates and di- C1-C4 alkylamino- C1-C4 alkyl-methacrylates, and wherein said ethylenically unsaturated hydroxy compound is

PATENT

Docket No.: CL/V-32421A

selected from the group consisting of hydroxy-substituted C_1 - C_6 alkylacrylates and hydroxy-substituted C_1 - C_6 alkylmethacrylates.

15. (Withdrawn) A polymerizable material of claim 14, wherein said ethylenically unsaturated amine is 2-terbutylaminoethylmethacrylate or 2-terbutylaminoethylacrylate, wherein said ethylenically unsaturated hydroxy compound is 2-hydroxyethylmethacrylate or 2-hydroxyethylcrylate, wherein component (c) consists of a diisocyanate selected from the group consisting isophorone diisocyanate (IPDI), toluylene-2,4-diisocyanate (TDI), methylenebis(cyclohexyl-isocyanate), 1,6-diisocyanato-2,2,4-trimethyl-n-hexane (TMDI), methylenebis(phenyl-isocyanate) and hexamethylene-diisocyanate (HMDI).

16-46. (Canceled)